

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1, 2, 4-8, 10-13 and 15 are presented for consideration. Claims 1 and 7 are independent. Claims 1, 5, 7 and 11 have been amended to clarify features of the subject invention. Support for these changes can be found in the original application, as filed. Accordingly, no new matter has been added.

Applicants request favorable reconsideration and withdrawal of the objection and rejections set forth in the above-noted Office Action.

The drawings were objected to on formal grounds. Specifically, the Examiner asserted that “STEP S210” in FIG. 8B is not discussed in the description. Applicants have amended the specification to more clearly recite those features discussed in Fig. 7, including Figs. 7A and 7B, and in Fig. 8, including Figs. 8A and 8B. Applicants submit that these changes overcome the Examiner’s objections. Such favorable indication is requested.

Turning now the art rejections, claims 1, 2, 4, 6-8, 10, 12, 13 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,081,614 to Yamada et al. in view of U.S. Patent Application No. 2002/0054715 to Os et al. and further in view of U.S. Patent No. 6,068,954 to David. Claims 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Yamada et al. patent in combination with the Os et al. publication and the David patent as applied above to claim 1, and further in view of U.S. Patent No. 5,751,428 to Kataoka et al. Applicants submit that the cited art, whether taken individually or in combination, does not teach or suggest many features of the present invention, as previously recited in these

claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicants submit that independent claims 1 and 7, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 1 recites a method of measuring a position of a surface of an object while the object is scanned relative to a detection unit in a scanning direction in an X-Y plane. The detection unit is configured to detect the position of the surface in a Z direction perpendicular to the X-Y plane. The method includes a detecting step of scanning the object relative to the detection unit in two scanning directions, in the X-Y plane, opposite to each other, and detecting, using the detection unit, with respect to each of the two scanning directions, a position of the surface in the Z direction for the same detection point on the surface, a calculating step of calculating a correction value for correcting a position of the surface to be detected by the detection unit, based on the positions of the surface detected for the same detection point with respect to the two scanning directions in the detecting step, and a correcting step of correcting the position of the surface detected by the detection unit while the object is scanned relative to the detection unit in one of the two scanning directions, with the correction value obtained in the calculating step.

In another aspect of the present invention, independent claim 7 recites a measuring apparatus for measuring a position of a surface of an object while the object is scanned in a scanning direction in an X-Y plane. The apparatus includes a detecting unit configured to detect the position of the surface of the object in a Z direction perpendicular to the X-Y plane, a stage configured to scan the object relative to the detecting unit in the scanning direction, a controller configured to cause the stage to scan the object relative to the detecting unit in two scanning directions, in the X-Y plane, opposite to each other, to detect, using the detecting unit, with

respect to each of the two scanning directions, a position of the surface in the Z direction for the same detection point on the surface, to calculate a correction value for correcting a position of the surface to be detected by the detecting unit while the object is scanned relative to the detecting unit in one of the two scanning directions, based on the positions of the surface detected for the same detection point with respect to the two scanning directions, and to correct the position of the surface detected by the detecting unit while the object is scanned relative to the detecting unit in the one of the two scanning directions, with the calculated correction value.

Applicants submit that the cited art does not teach or suggest such features of Applicants' present invention, as recited in independent claims 1 and 7.

The Examiner relies on the Yamada et al. patent for teaching a method and an apparatus for measuring a position of a surface of an object while the object is scanned relative to a detection unit in a scanning direction in an X-Y plane, the detection unit being configured to detect the position of the surface in a Z direction perpendicular to the X-Y plane. Applicants submit, however, that the Yamada et al. patent does not teach or suggest at least the detecting unit and the controller of the present invention, as recited in independent claim 7, or the detecting step and calculating step of the present invention, as recited in independent claim, for example, in which the detecting step includes scanning the object relative to a detecting unit in two scanning directions in an X-Y plane, opposite to each other, and detecting, using the detecting unit, with respect to each of the two scanning directions, a surface of the position in the Z direction for the same detection point on the surface and the calculating step includes calculating a correction value for correcting a position of the surface to be detected by the detecting unit, based on the positions of the surface detected for the same detection point with respect to the two scanning directions that have been detected. Accordingly, the Yamada et al. patent does not

teach or suggest many features of Applicants' present invention, as recited in independent claims 1 and 7.

Applicants further submit that the remaining art cited does not cure the deficiencies noted above with respect to the Yamada et al. patent.

The Os et al. publication shows a scanner for capturing and rendering an image by both of the top to bottom paths and the return. Applicants submit, however, that the Os et al. publication, as with the Yamada et al. patent, does not teach or suggest salient features of Applicants' present invention, as recited in independent claims 1 and 7, which have been discussed above.

The Examiner relies on the David patent for showing processing of multiple wafers per lot and the Kataoka et al. patent for showing a calculating step in which positions of the surface detected in a first detecting step with respect to two scanning directions are weighted averaged, and a correction value is calculated based on the weighted average. Applicants submit, however,

that this art, as with the Yamada et al. patent and Os et al. publication discussed above, do not teach or suggest such features of Applicants' present invention, as have been discussed above.

Applicants submit, therefore, that the David and Kataoka et al. patents add nothing to the teachings of the Yamada et al. patent and Os et al. publication that would render obvious Applicants' present invention, as recited in independent claims 1 and 7.

For the foregoing reasons, Applicants submit that the present invention, as recited in independent claims 1 and 7, is patentably defined over the cited art, whether that art is taken individually or in combination.

Dependent claims 2, 4-6, 8, 10-13 and 15 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in

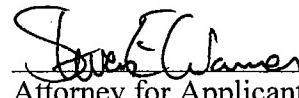
their respective independent claims. Further individual consideration of these dependent claims is requested.

For the reasons noted above, Applicants submit that this Amendment After Final Rejection places this application in condition for allowance. This Amendment was not earlier presented because Applicants believed that the prior Amendment placed the application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Applicants request favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action, and an early notice of allowance.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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